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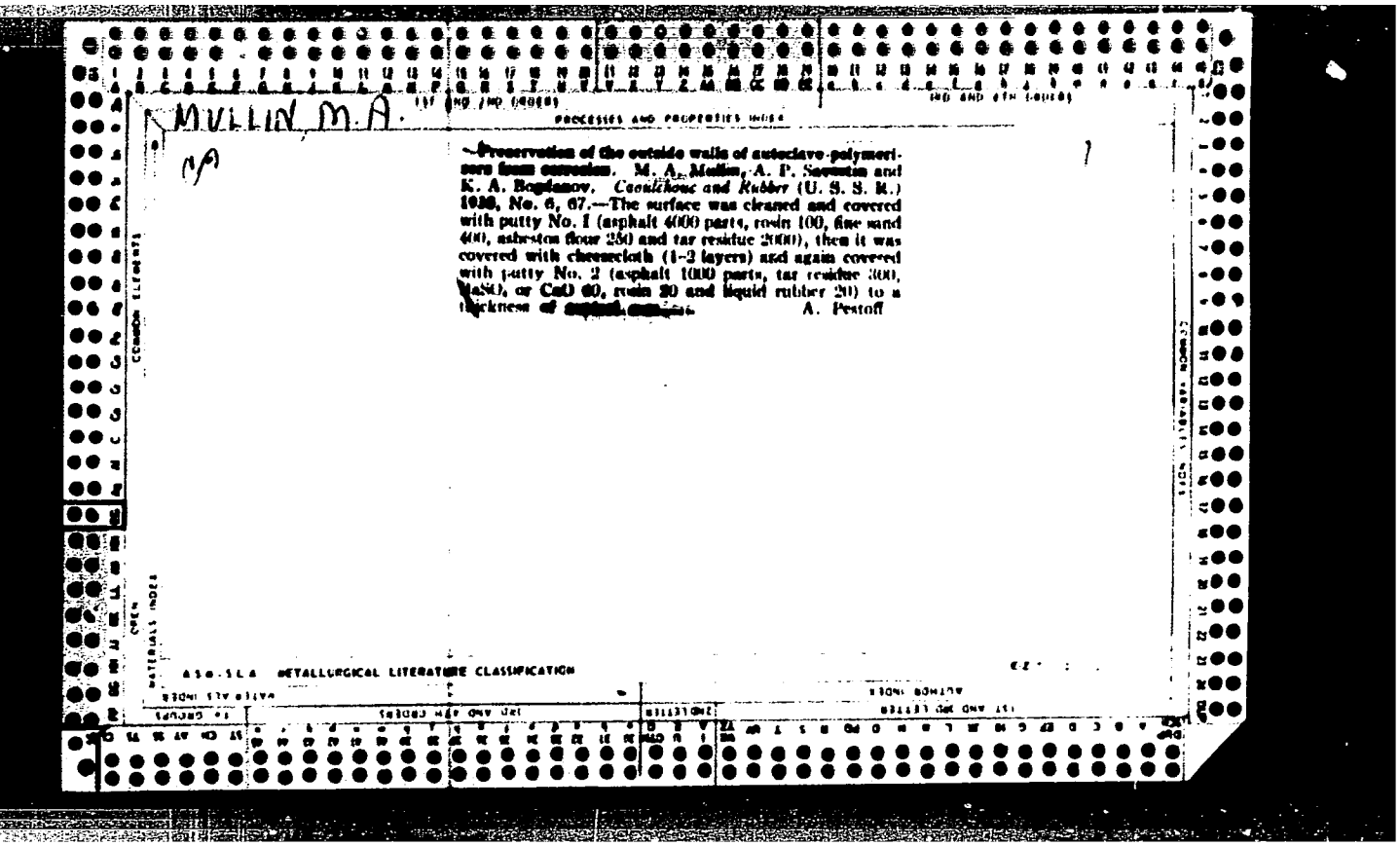

MULLIN, M.A.

PROCESSES AND PROPERTIES INDEX

~~Preservation of the outside walls of autoclave-polymerizers from corrosion.~~ M. A. Mullin, A. P. Sorokin and K. A. Bogdanov. *Caoutchouc and Rubber* (U. S. S. R.) 1939, No. 6, 67.—The surface was cleaned and covered with putty No. 1 (asphalt 4000 parts, rosin 100, fine sand 400, asbestos flour 250 and tar residue 2000), then it was covered with cheesecloth (1–2 layers) and again covered with putty No. 2 (asphalt 1000 parts, tar residue 300, MnO_2, or CaO 60, rosin 20 and liquid rubber 20) to a thickness of [illegible]. A. Pestoff

ASTM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

Distr: 4E4j/4E2c(j)/

Preparation of low-molecular-weight polyisobutylene (P-20). M. A. Maillis, A. P. Savostin, and V. I. Anosov (Efremov Synthetic Rubber Plant, Ta.Z.L.). *Kauchuk i Rezina* 16, 8, 27–30(1957).—Liquid C_4H_8 added to 95–97% isobutylene (I) at −100° in an ampul, liquid C_4H_8 mixed with 1% $AlCl_3$ or BF_3 in EtCl in another, both ampuls emptied at once into a beaker, where I polymerizes for 10–30 sec. in boiling C_4H_8, *p-tert*-butylphenol sulfide (1–2% on polymer) added to prevent depolymerization, the polymer dried at 105°, gives polyisobutylene (II) with a mol. wt. of 120,000–250,000 (by viscosity). However, the optimum conditions for a mol. wt. of 15,000–25,000 in a continuous process in evapg. C_4H_8 are: an I:C_4H_8 ratio of 1:2–2.5; 1.2–1.4% diisobutylene (on I) to regulate the mol. wt.; 0.3–0.5% BF_3 as catalyst; and 0.02–0.03% alc. (as MeOH) or 0.001% CCl_3CO_2H as co-catalyst. MeOH 0.025 plus *iso*-BuOH 0.005% reduces reaction time from 110 to 13 sec. and raises yield from 75 to 92%. Hexane (which retards the reaction) and the diisobutylene fraction (b. 100–125°) also act as regulators. Dibenzoyl peroxide (0.001%) reduces the mol. wt. from 198,500 to 18,900, but makes the reaction incomplete and much slower. Malcolm Anderson

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

MULLIN, M.A.; SAVOSTIN, A.P.; ANOSOV, V.I.; CHEMODANOVA, Ye.S.

Stabilization of mineral oils thickened with low-molecular polyisobutylene. Khim. i tekh.topl. i masel 4 no.1:49-52 Ja '59. (MIRA 12:1)

1. TSentral'naya zavodskaya laboratoriya Yefremovskogo zavoda sinteticheskogo kauchuka.
(Lubrication and lubricants) (Propene) (Depolymerization)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

MULLIN, M.A.; SAVOSTIN, A.P.; CHEMODANOVA, Ye.S.

Development of the continuous method for the production of polyisobutylene with 1000-3000 molecular weights. Khim. i tekh. topl. i masel 10 no.10:23-26 '65. (MIRA 18:10)

1. Yefremovskiy zavod sinteticheskogo kauchuka.

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

L 01011-66 EWT(m)/EPF(c)/EWP(j)/T DJ/RM

ACCESSION NR: AP5019983 UR/0065/65/000/008/0019/0024

542.61.002.2

AUTHOR: Anosov, V. I.; Dintses, A. I.; Martynova, N. V.; Mullin, M. A.; Nikonorov, Ye. M.; Popova, L. A.; Savostin, A. P.; Chemodanova, Ye. S.

TITLE: Development of a continuous process for production of polyisobutylene with molecular weights of 10,000 and 20,000

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 8, 1965, 19-24

TOPIC TAGS: isobutylene, polymerization, lubricant additive, fuel thickener

ABSTRACT: The objective of the study was to develop a continuous process for production of polyisobutylene with molecular weights of 10,000 (commercial oil additive P-10) and 20,000 (commercial oil additive P-20). These additives are used in manufacturing automotive, aviation, and some special purpose lubricating oils. Isobutylene is polymerized in an inert solvent (isobutane, pentane, and others) using $AlCl_3$ (in ethyl or methyl chloride) as a catalyst. Flow-sheet of the industrial scale polymerization unit is shown in fig. 1 of the Enclosure. The linear velocity of the reacting mixture through the reactor is 3-3.5 m/sec and the heat exchange

Card 1/3

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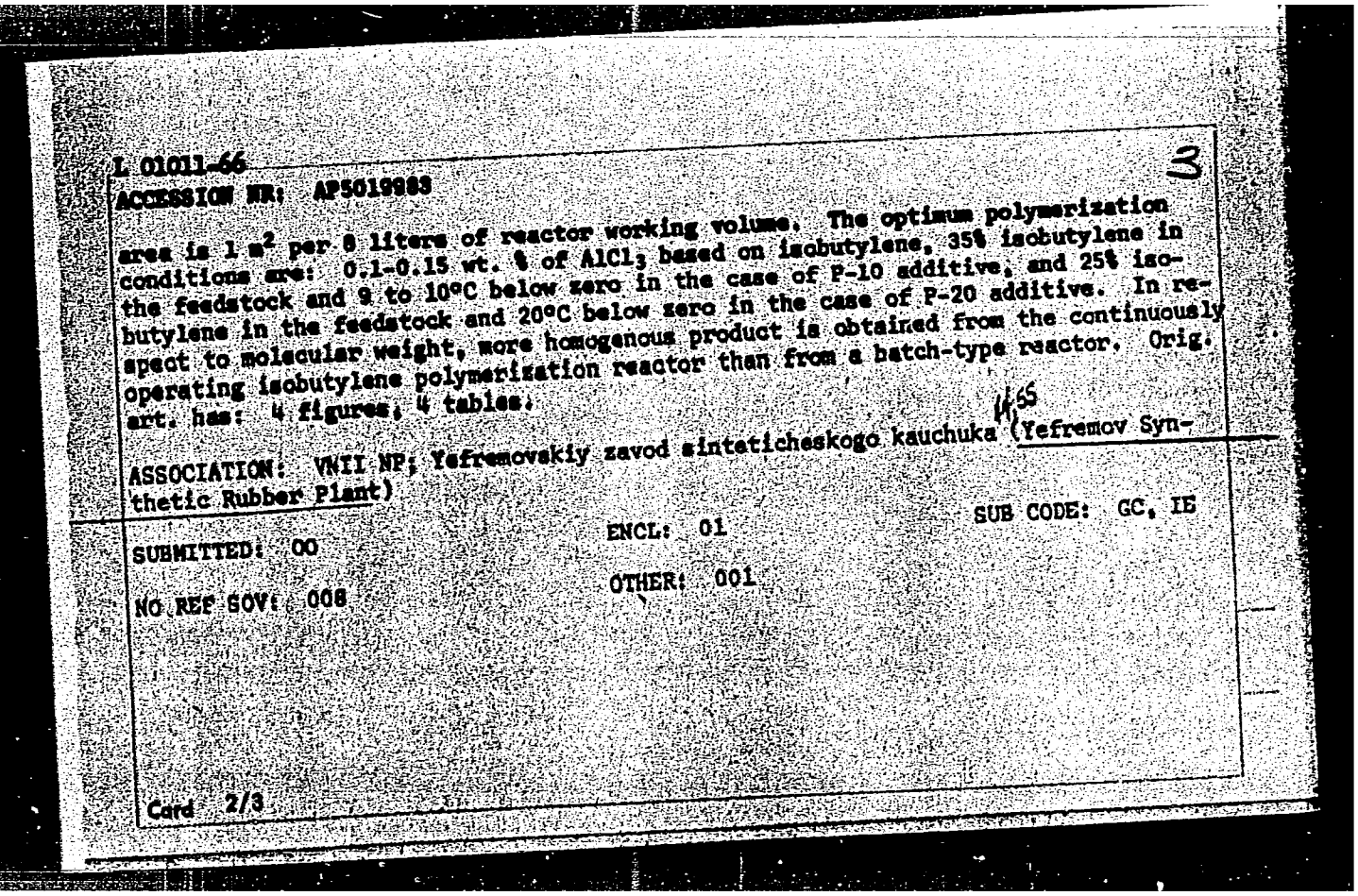

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ACCESSION NR: AP5019983

area is 1 m^2 per 8 liters of reactor working volume. The optimum polymerization conditions are: 0.1-0.15 wt. % of $AlCl_3$ based on isobutylene, 35% isobutylene in the feedstock and 9 to 10°C below zero in the case of P-10 additive, and 25% isobutylene in the feedstock and 20°C below zero in the case of P-20 additive. In respect to molecular weight, more homogenous product is obtained from the continuously operating isobutylene polymerization reactor than from a batch-type reactor. Orig. art. has: 4 figures, 4 tables.

ASSOCIATION: VNII NP; Yefremovskiy zavod sinteticheskogo kauchuka (Yefremov Synthetic Rubber Plant)

SUBMITTED: 00 ENCL: 01 SUB CODE: GC, IE

NO REF SOV: 008 OTHER: 001

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ACCESSION NR: AP5019983

ENCLOSURE: 01

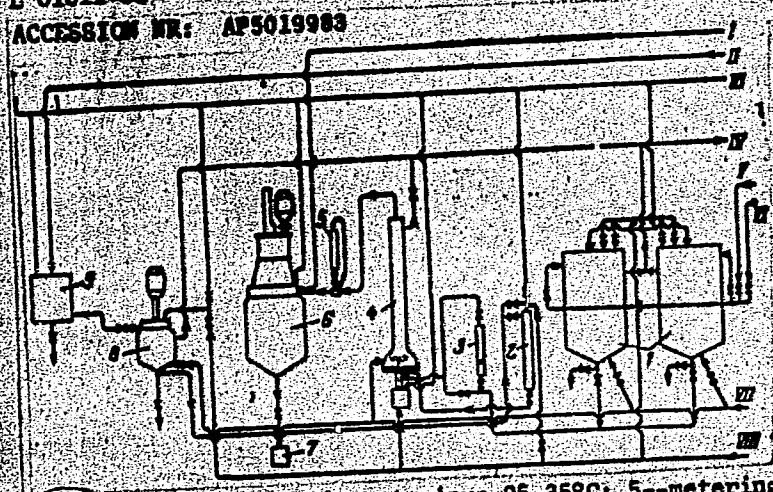

Fig. 1. I--vacuum line; II--ethyl chloride to the unit; III--air line; IV--gaseous ammonia from the unit; V--isobutylene to the unit; VI--isobutane to the unit; VII--liquid ammonia to the unit; VIII--nitrogen from the cylinders; 1--ammonia-cooled reservoirs containing isobutylene-isobutane mixture; 2--metering tank with catalyst wolution; 3--rotameter on the feed line; 4--polymerization reactor, mixing by bubbling nitrogen through the solution at minus 25-35°C; 5--metering tank with ethyl alcohol (for deactivating catalyst present in the product); 6--gas separator (two in a unit) where gases are removed during 1-2 hour heating at 100-120°C under agitation; 7--polyisobutylene product drain; 8--catalyst make-up vessel, ethyl chloride and $AlCl_3$ mixed for 1 hr at 15-20°C; 9--catalyst container.

Card 3/3 pop

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MULLIN, S. V.; SHAMAYEVA, A. M., agronom

In Tatarstan. Zashch. rast. ot vred. i bol. 6 no.6:58 Je '61. (MIRA 16:4)

(Tatar A.S.S.R.--Plants, Protection of)

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MULLINA, A.S.

Therapeutic use of blood from conors irradiated with ultraviolet rays to increase erythropoiesis. Izv. AN Kazakh.SSR Ser.khir. no.1: 22-37 '47. (MLRA 9:8)

1. Institut klinicheskoy i eksperimental'noy khirurgii Akademii nauk KazSSR i Kazakhskaya respublikanskaya stantsiya perelivaniya krovi.
(ERYTHROCYTES)
(ULTRAVIOLET RAYS--PHYSIOLOGICAL EFFECT)
(BLOOD--TRANSFUSION)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

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MULLINA, A.S.; REDKINA, T.M.

Variability of certain biological characteristics of microbes in wounds. Vest.AN Kazakh.SSR 11 no.11:94-103 N '55. (MLRA 9:3)
(Staphylococcus)

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MULLO, Ivan Mikhaylovich; PANKRASHOV, A., red.; POD"YEL'SKAYA, K., [illegible]

[Across the native land; aid to excursionists and tourists in the Karelian-Finnish S.S.R.] Po rodnomu kraiu; v pomoshch ekskursantam i turistam po Karelo-Finskoi SSR. Petrozavodsk, Gos.izd-vo Karelo-Finskoi SSR, 1955. 92 p. (MIRA 12:11)
(Karelia--Guidebooks)

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MULLO, Ivan Mikhaylovich; SHEKHTER, D.I., red.; SHEVCHENKO, L.V., tekhn.red.

[Petrozavodsk; guidebook and reference book] Petrozavodsk; putevoditel' i spravochnik. Petrozavodsk, Gos.izd-vo Karel'skoi ASSR, 1957. 128 p. (MIRA 12:11)
(Petrozavodsk--Guidebooks)

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MULLO, Ivan Mikhaylovich; RYBAK, Ye.D., red.; POD"YEL'SKAYA, K.M., tekhn.red.

[Medvezh'yegorsk; concise regional and historical study of the city and district] Medvezh'egorsk; kratkii istoriko-kraevedcheskii ocherk o gorode i raione. Petrozavodsk, Gos.izd-vo Karel'skoi ASSR, 1959. 96 p. (MIRA 13:12)
(Medvezh'yegorsk District)

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MAKSUDOV, A.M.; MULLOKANDOV, B.N.

Characteristics of the clinical aspects of ancylostomiasis in children. Pediatriia no.3:91 My-Je '54. (MLRA 8:1)

1. Iz Tashkentskogo meditsinskogo instituta i Detskoy gorodskoy klinicheskoy bol'nitsy No.6.
(HOOKWORM DISEASE)

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MULLOKANDOV R. M. PA 49T83

[redacted]/Physics Oct 1947
[redacted] Conductivity
Conductivity, Thermal

"Contact Heat Conductance of the Layer of Spherical Particles," R. M. Mullokandov, Moscow State U, Lab Molecular-Thermal Phenomena, 4 pp

"Zhur Tekh Fiz" Vol XVII, No 10

Author conducted experiments to determine contact temperature conductivity of dispersion system, and from results to conduct evaluation of thermal conductivity of the system. Made use of methods suggested by Kudrat'yev and Stakanko to find the coefficient of [redacted] temperature conductance of dispersion systems. [redacted], 2 Jun 1947.

49T83

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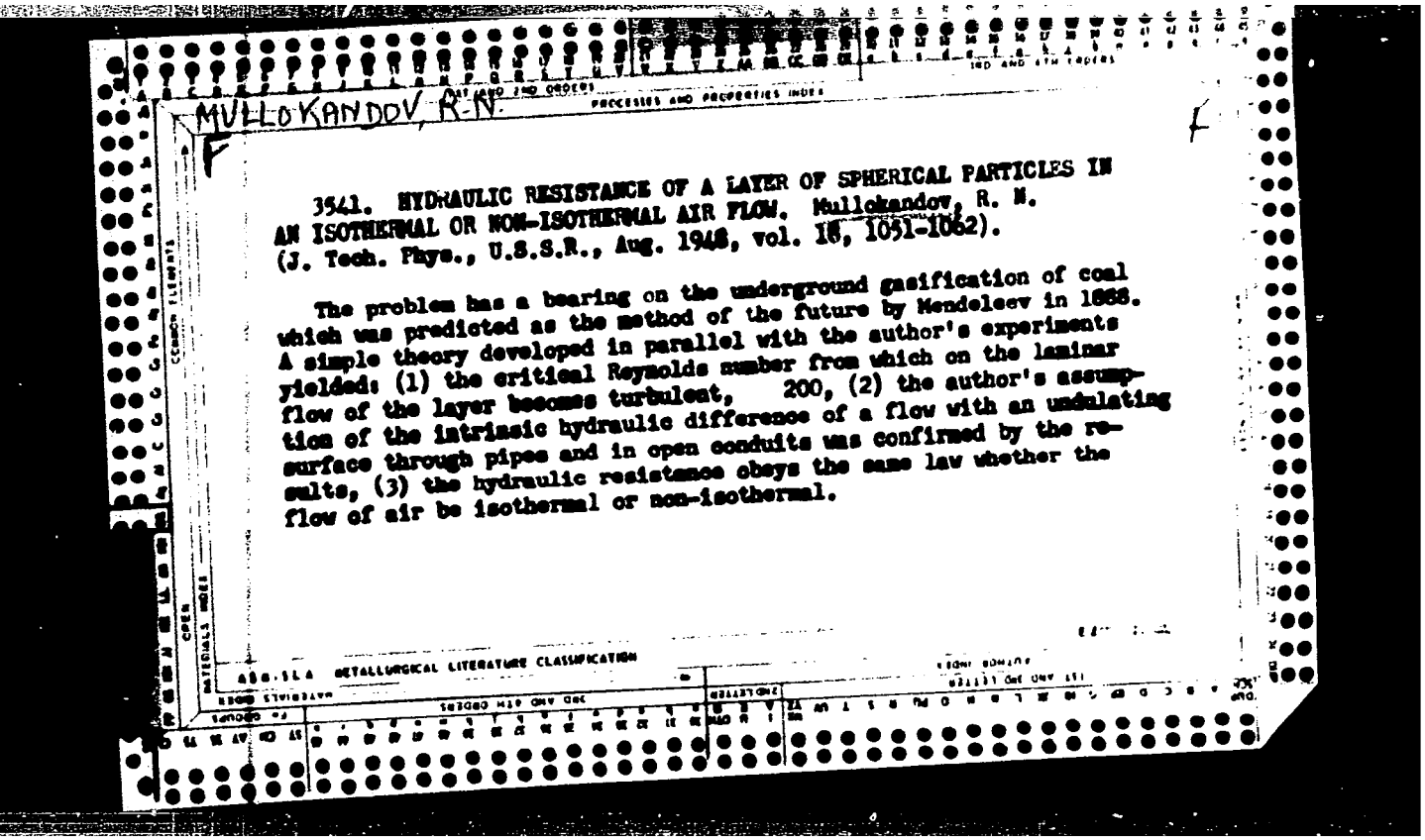

MULLOKANDOV, R.N.

3541. HYDRAULIC RESISTANCE OF A LAYER OF SPHERICAL PARTICLES IN AN ISOTHERMAL OR NON-ISOTHERMAL AIR FLOW. Mullokandov, R. N. (J. Tech. Phys., U.S.S.R., Aug. 1948, vol. 18, 1051-1062).

The problem has a bearing on the underground gasification of coal which was predicted as the method of the future by Mendeleev in 1888. A simple theory developed in parallel with the author's experiments yielded: (1) the critical Reynolds number from which on the laminar flow of the layer becomes turbulent, 200, (2) the author's assumption of the intrinsic hydraulic difference of a flow with an undulating surface through pipes and in open conduits was confirmed by the results, (3) the hydraulic resistance obeys the same law whether the flow of air be isothermal or non-isothermal.

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GAFUROV, A.T.; AYKHODZHAYEV, T.T.; ABDURASHITOV, K.; TURSUNOV, S.; KOVAL'SKIY, N.I.; MULLOKANDOV, R.N.; REZNIK, G.P.; YAKUBOV, L.M.

Change of certain characteristics of cotton and kenaf under the action of ultrasound. Prim. ul'traakust. k issl. veshch. no.14: 121-127 '61. (MIRA 14:12)

(Ambary hemp) (Cotton)
(Ultrasonic waves--Industrial applications)

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MUL'MAN, B. Ye

AVRUNIN, Abram Grigor'yevich; ARINKIN, Viktor Vasil'yevich; MUL'MAN, Boris Yefimovich; STRUNGE, Boris Nikolayevich; MORGULIS, Yu.B., kand. tekhn.nauk, retsenzent; MELEYEV, A.S., inzh., red.; GERASIMOVA, Ye.S., tekhn.red.; SOKOLOVA, T.F., tekhn.red.

[D 100 diesel engine] Dizel' D100. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958. 325 p. (MIRA 11:7)
(Diesel engines)

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STRUNGE, Boris Nikolayevich; MUL'MAN, Boris Yefimovich; EPSHTEYN, Abram Semenovich; GUREVICH, A.N., kand. tekhn. nauk, retsenzent; SMIRNOVA, V.L., red. izd-va; EL'KIND, V.D., tekhn. red.

[Design of locomotive and marine engines abroad] Konstruktsii zarubezhnykh teplovoznykh i sudovykh dvigatelei. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 299 p. (MIRA 14:11)

(Diesel locomotives) (Marine diesel engines)

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MUL'MAN, B.Ye., kand.tekhn.nauk

Installation of a nonreturn valve in a piston rod. Teplovoz. i sud.dvig. no.3:163-177 '62. (MIRA 16:2)
(Diesel engines)

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MUL'NER, YU. S.

Feeding and Feeding Stuffs

Composition and development of branches of animal husbandry on the Budenny Collective farm. Sots. zhiv. 14 no. 8, 1952.

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1. MUL'NER, YU.S.

2. USSR (600)

4. Feeding and Feeding Stuffs

7. Prospects for the development of stockbreeding on the "Leninets" Collective Farm, Krasnodar Territory, Sots.zhiv. 15 no. 5, 1953.

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

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KUZ'MINOVA, M.L.; SLAVINA, Kh.M.; ZHDANOVA, L.D.; PLETNEVA, O.G.; BUSEL', A.L.; MULOKANDOV, B.P.

Etiological significance of certain serological types of Escherichia coli in dyspepsia. Med. zhur. Uzb. no.4:20-24 Ap '60. (MIRA 15:3)

1. Iz kishechnogo otdela Instituta vaktsin i syvorotok i kafedry pediatrii Tashkentskogo gosudarstvennogo instituta usovershenstvovaniya vrachey i Tashkentskogo gosudarstvennogo meditsinskogo instituta.

(ESCHERICHIA COLI)
(DYSPEPSIA)

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MITROVIC, Milun; NESIC, Zoran; LAZIC, Dragan; MULOSEVIC, Rajko

Congenital hereditary malformation of the 1st metatarsal bone. Srpski arh. celok. lek. 90 no.3:331-336 Mr '62.

1. Odeljenje za deciju hirurgiju i ortopediju Opste bolnice u Nisu Sef: prim. dr. Milun Mitrovic. Zavod za rendgenologiju Opste bolnice u Nisu V. d. sefa: dr. Srbislav Stankovic.
(METATARSUS abnorm)

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BELOUS, M.V.; MUL'TAKH, L.M.; PERMYAKOV, V.G.

Carbide transformations during the rapid deformation of 45 steel. Fiz.-met. i metalloved. 20 no.5:728-732 N '65.
(MIRA 18:12)

1. Kiyevskiy politekhnicheskiy institut. Submitted November 10, 1964.

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MULTAN, J., inz.

Production of gas concrete at Sastinske Straze. Stavivo 41 no.5:154-158 My '63

1. Technolog zavodu Porobeton, Sastinske Straze.

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MULTAN, J., inz.

Influence of the sand grinding fineness and the steam temperature on the strength of gas concrete products. Stavivo 42 no.1:12-13 '64.

1. Lahke stavebni hmoty, n.p., Savod Porobeton, Sastinske Straze.

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MUL'TAN, Sergey Sergeyevich; YAKOVLEV, A.B., otv. red.; MIRSKAYA, V.V., red.izd-va; GALANOVA, V.V., tekhn. red.

[Assembly and repair of electric mining equipment] Montazh i remont shakhtnogo elektrooborudovaniia. Moskva, Gos. nauchno-tekhn. izd-vo, 1961. 203 p. (MIRA 14:9)
(Electricity in mining)

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MULTAN, Z.

"Floods of the Vistula River."
Gaze'a Obserwatora. P.I.H.M., Warszawa, Vol 6, No 10, Oct. 1953, p. 5

SO: Eastern European Accessions List, Vol 3, No 10, Oct 1954, Lib. of Congress

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MULTANOVSKAYA, A.A.; MULTANOVSKIY, V.V.

For a close connection between the teaching of physics and mathematics. Fiz.v shkole 22 no.5:93-97 S-O '62. (MIRA 15:12)

L. l-ya belokholupitskaya srednyaya shkola Kirovskoy oblasti.
(Mathematics—Study and teaching)
(Physics—Study and teaching)

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MULTANOVSKAYA, G.

Organizatsionno-massovaia rabota profsoiuzov. Kratkii ikazatel' literatury dlia prof. aktiva (Trade unions' organizational work and work with the people). Moskva, Profizdat, 1952. 32 p. (Nauch. b-ka VTsSPS)

SO: Monthly List of Russian Accesssions, Vol 6, No. 3, June 1953

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MULTANOVSKAYA, G.S.; NEYMAN, V.V.; YAGODINA, Ye.D., kand. pedag. nauk, red.; KHELEMSKAYA, L.M., tekhn. red.

[Scientific and technical knowledge for everyone; collection of materials for the assistance of public libraries] Nauchno-tekhnicheskie znaniia - v massy; sbornik materialov v pomoshch' massovym bibliotekam. Moskva, 1958. 195 p. (MIRA 11:8)

1. Moscow. Publichnaya Biblioteka. Nauchno-metodicheskiy kabinet bibliotekovedeniya.
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MUL'TANOVSKAYA, M.P.; FRIDMAN, F.P.

Catamnesis of children born in axphyxia. Pediatriia 39 no.5:22-24 S-O '56. (MLRA 10:1)

1. Iz akusherako-ginekologicheskoy kliniki (zav. - prof. A.B.Preysman) Turkmenskogo meditsinskogo instituta imeni I.V.Stalina.
(ASPHYXIA NEONATORUM, complications, seq. (Rus))

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MULTANOVSKAYA, N. S., Eng. Cand. Tech. Sci.

Dissertation: "On the Problem of Obtaining Panal Varnishes and Their Application in Polygraphy." Moscow Polygraphic Inst, 27 Jan 47.

SO: Vechernyaya Moskva, Jan, 1947 (Project #17836)

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MULTANOVISKI, B. [Multanovskiy, B.] (Blagoveshchensk, SSSR); KAPITONOV, I. (Blagoveshchensk, SSSR)

Gravitational field, and movement in it; weight and weightlessness. Mat i fiz Bul; 7 no.6:16-25 N-D '64.

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MUL'TANOVSKIY, B.N., zasluzhennyy vrach Udmurtskoy ASSR

Acute appendicitis as indicated by records of the surgical clinic in Izhevsk for 20 years. Trudy Izhev.gos.med.inst. 13:165-181 '51. (MIRA 13:2)

1. Iz kliniki obshchey khirurgii meditsinskogo instituta. Zaveduyushchiy klinikoy - prof. N.F. Rupasov.
(APPENDICITIS)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

VORONCHIKHIN, S.I.;KUPASOV, N.F.;STRELKOV, S.Ya.;GAZIZOV, KH.M.;KOZ'MIN, M.G.;MUL'TANOVSKIY, B.N.;SABEL'NIKOV, I.I.;SOLOPAYEV,A.G.;CHUDNOVA, V.S.

In memory of S. A. Flerov. Khirurgiia, Moskva no. 10:88 Oct 1952. (CIML 23:3)

1. Obituary of Head of the Department of Faculty Surgery at Izhevsk Medical Institute.

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KAYUSHIN, L.P.; LYUDKOVSKAYA, R.G.; MUL'TANOVSKIY, M.M.

Effect of temperature on the elastic properties of nerves.
Biofizika 1 no.5:405-411 '56. (MIRA 9:10)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.
(TEMPERATURE--PHYSIOLOGICAL EFFECT)
(NERVES)

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Hd., Organization-Methodology Dept., Inst. Tuberculosis, Dept. Clinical Med., -1946-.

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MUL'TANOVSKIY, M.P.

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1. Professor. 2. Department of the History of Medicine.

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1. Professor. 2. Moscow.

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1. MUL'TANOVSKIY, M.P., PROF.

2. USSR (600)

4. Pirogov, Nikolai Ivanovich, 1810-1881

7. Problem of Tuberculosis in N. I. Pirogov's works. Sov.med. 16 no.9, 1952.

9. **Monthly List of Russian Accessions**, Library of Congress, January 1953. Unclassified.

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MUL'TAMOVSKIY, M.P., professor

L.A.Tarasevich. Zdorov'e 3 no.6:7-8 Je '57. (MIRA 10:7)
(TARASEVICH, LEV ALEKSANDROVICH, 1868-1927)

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(ENGLISH LANGUAGE--DICTIONARIES--RUSSIAN)
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(HISTORY, MEDICAL, educ.
in Russia (Rus))

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(PUBLIC HEALTH, hist.
in Russia, Learned Med. Council (Rus))

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MUL'TANOVSKIY, M.P., prof. (Moskva)

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(ALBARRAN, JOAQUIN, 1860 - 1912)

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MULTANOVSKAYA, A.A.; MULTANOVSKIY, V.V.

For a close connection between the teaching of physics and mathematics. Fiz.v shkole 22 no.5:93-97 S-O '62. (MIRA 15:12)

L. 1-ya belokholupitskaya srednyaya shkola Kirovskoy oblasti.
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(Physics—Study and teaching)

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

SOKOLOVSKIY, Yuriy Iosifovich; RUMER, Yu.B., retsenzent;
MULTANOVSKIY, V.V., retsenzent; MIKHALKEVICH, T.V., red.

[Elements of the theory of relativity with graphic proofs]
Nachala teorii otnositel'nosti s graficheskimi dokazatel'-
stvami. Moskva, Prosveshchenie, 1964. 146 p.
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839. MULTAŃSKI J. III. Klin. Chor. wewn. A. M., Łódź. "Wpływ bronchografii na sprawność narządu oddychania. Effect of bronchography on the respiration system efficiency POL. TYG. LEK. 1955, 10/27 (886-888)

In 12 patients with pulmonary pathological changes thorough functional examination of the respiratory apparatus using various tests, was carried out before and a day after bronchography. No test revealed any impairment of the respiratory function, even when lipiodol (5-7 ml.) flowed over to the other, healthy lung.

Szpunar - Cracow (XI, 14*)

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1. Z III Kliniki Chorob Wewnetrznych A.M. w Lodzi; kierownik: prof. dr. med. Waclaw Markert i z Zakladu Anatomii Patologicznej A.M. w Lodzi; kierownik: prof. dr. med. Aleksander Pruszczynski.
(THYMOMA compl.)
(MEDIASTINUM neopl.)
(HEART FAILURE CONGESTIVE etiol.)

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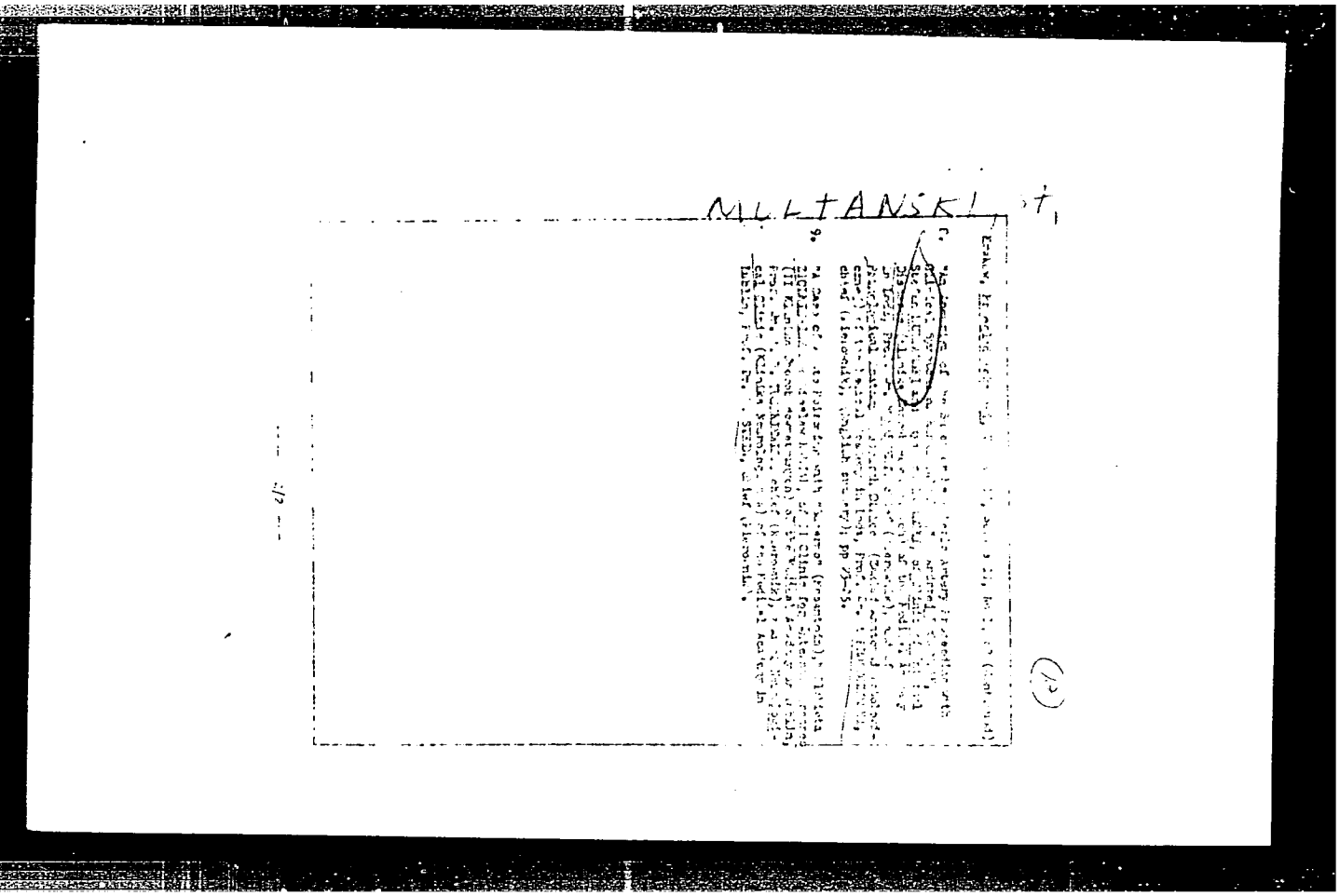

MULTANSKI

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MULTARZYNSKI, L.

"Testing the thermal efficiency of a gas kitchen," Gaz, Woda I Technika Sanitarna, Warszawa, Vol 28, No 9, Sept. 1954, p. 258.

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MULTATOVA, N.N.; BATYREVA, A.A., kand. biol. nauk; PETRASHEVSKAYA, M.M., kand. med. nauk; SHTEYNBUKH, N.V., kand. med. nauk

Diagnosis and clinical aspects of toxoplasmosis in women with complicated obstetrical anamnesis. Akush. i gin. no.1:133-136 '65. (MIRA 18:10)

1. Rostovskiy-na-Donu nauchno-issledovatel'skiy institut akusherstva i pediatrii (dir.- kand. med. nauk F.S. Baranovskaya).

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MUL'TATULI, D.Kh., inzhener.

Forty-ton tractor trailer for hauling excavators. Mekh.stroi. 10 no.8:24-25 Ag '53. (MLRA 6:8) (Tractors)

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MUL'TATULI, D.Kh., inzhener.

Shortcomings in the All-Union State Standard 591-55. Standartizatsiia no.2:81 Mr-Ap '57. (MLRA 10:6)
(Link belting--Standards)

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MUL'TATULI, D.Kh.

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(Boring machinery)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

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ZAKHAROV, L.V., inzh.; MUL'TATULI, D.Kh., inzh.

Anchoring reinforcement with terminal nodes. Bet.i zhel.-bet. no.6:264-266 Je '61. (MIRA 14:7)
(Concrete reinforcement)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

MUL'TATULI, D.Kh.

Useless tradition. Standartizatsiia 25 no.12:52-53 D '61. (MIRA 14:11)

(Engineering--Handbooks, Manuals, etc.)

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MULTRUS, Vladimir, inz.

Pneumatics, a new trend in automation technique. Automatizace 7 no.5:127-132 My'64.

1. Chair of Automation, Faculty of Mechanical Engineering, Czech Higher School of Technology, Prague.

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

L 20358-66 EEC(k)-2/EWP(v)/T/EWP(k)/EWP(h)/EWP(1) IJP(c) GG/BB
ACC NR: AP6012043 SOURCE CODE: CZ/0080/65/000/002/0029/0035

AUTHOR: Hultrus, Vladimir (Engineer); Brychta, Ondrej (Engineer) 62 B

ORG: [Hultrus] CVUT, Prague; [Brychta] Konstrukta, Trencin

TITLE: Pneumatic logical elements and relay systems

SOURCE: Automatisace, no. 2, 1965, 29-35 16C

TOPIC TAGS: pneumatic control system, automation 14

ABSTRACT: The article discusses the present state of pneumatic logical elements and systems in Czechoslovakia and abroad and deals mainly with relay systems. Two relay systems are described and evaluated: the Soviet USEPPA and the low-pressure system developed by V. Ferner in East Germany. The article evaluates the possibilities and gives certain examples of the use of pneumatic logical elements in automation. Orig. art. has: 10 figures. [JPRS]

SUB CODE: 13 / SUBM DATE: none / ORIG REF: 006 / OTH REF: 011
SOV REF: 006

Card 1/1 UDC: 62-55: 621.54

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

L 41182-66

ACC NR: AP6023852 SOURCE CODE: CZ/0080/65/000/007/0171/0174

AUTHOR: Maltrus, Vladimir (Engineer)

ORG: Department of Automation, Engineering Faculty, CVUT, Prague (Katedra automatizace, Strojna fakulta, CVUT)

54
B

TITLE: Universal aggregate system for pneumatic control

SOURCE: Automatizace, no. 7, 1965, 171-174

TOPIC TAGS: pneumatic control system, computer design

ABSTRACT: The article discusses a new universal aggregate system for pneumatic control developed at the Institute for Equipment Regulation and Control at Dresden, East Germany, said to preserve all the advantages of pneumatic systems. Orig. art. has: 7 figures. [JPRS: 32,496]

SUB CODE: 09 / SUBM DATE: none / ORIG REF: 004 / OTH REF: 001

Card 1/1 hs

UDC: 62-55;621.54

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

MUL'TSEVA, V.A.

Akademiya nauk SSSR. Komissiya po nauchnoy fotografii i kinematografii

Trudy 7-y [sedmoy] nauchnoy fotografii i kinematografii

Trudy 7-y [sedmoy] nauchnoy fotografii i kinematografii. Moscow, 1960. 260 p. Errata slip inserted. 1,000 copies printed.

Additional Sponsoring Agency: Nauchno-issledovatel'skiy institut fotokhimicheskoy promyshlennosti.

Editorial Board: F.F. Chibisov (Resp. Ed.) Corresponding Member, Academy of Sciences USSR; V.I. Shcherov (Deputy Resp. Ed.) Candidate of Chemical Sciences; Ye.A. Ivanov, Doctor of Chemical Sciences, Professor; and I.I. Levkoyev, Candidate of Chemical Sciences; Ed. of Publishing House: K.F. Nesterkovich; Tech. Ed.: G.E. Blinkin.

PURPOSE: This collection of articles is addressed to those working in theoretical and applied photography and cinematography, and to researchers in the chemistry and physics of photographic processes.

COVERAGE: The collection contains articles from the editorial files of the Thermal Laboratory of the Photographic Research Institute. The articles discuss problems in the chemistry and physics of photographic processes, including the theory of latent image formation and processing of halide silver light-sensitive layers, the nature of photographic sensitivity, the preservability of photographic layers, the nature of photographic sensitivity, the preservability of photographic layers, the nature of photographic sensitizers and optical sensitization, and, finally, the chemical photographic processing of black-and-white and color photographic materials. Many of the articles contain the results of scientific investigations made by the authors. The collection also includes several reviews of current problems in the theory of chemical-photographic processes. A bibliography of Soviet and non-Soviet references accompanies each article.

Vandenkubi, L.V. Effect of Preparation and Processing Conditions of Photographic Layers on Deviation From the Law of Reciprocity 57

Mikhaylik, Yu. N. Effect of Chemical Sensitization on the Sensitivity of Photographic Emulsions at Low Illumination Intensities 77

Frolova, L.G., Yu. A. Kreymer, and P.V. Sidorenkova. Role of Silver-Halogen Ions in the Chemical Sensitization of Photographic Emulsions With Gold 87

Berlyand, L.Ye., and L.B. Gol'berg. Investigation of Effect of Sodium Thiosulfate on the Photographic Properties of Emulsions Sensitized With Gold 96

Borisov, V.M. Change in the Dispersion of Small Grain Emulsions in the Chemical Aging Process 109

Klyuyev, N.A., Yu. G. Gribkov, and V.L. Zolotarev. Continuous Processes in the Synthesis of Photographic Emulsions 128

Zelikman, V.L., and Yu.Ya. Kandel'kina. Gelatin Concentration in the First Aging 133

Levi, S.M. Modern Concepts of Gelatin Structure 150

Klimov, Ye.A., and S.G. Parenago. Albuminous Type Admixtures in Photographic Gelatin 154

Levi, S.M. Modern Concepts of the Rheologic Properties of Gelatin Solutions and Photographic Emulsions 157

Dvoretskiy, I.M., and V.A. Milligerts. Search for Ways of Improving the Structural Mechanical Properties of Photographic Layers for Nuclear Research 159

Zelikman, V.L. Methods of Tanning Photographic Emulsions 161

Levi, S.M., Effect of Wetting Agents in Mixtures and During Prehardener Coating 170

Mel'nikova, M.F., Elementary Composition of Nuclear Photographic Emulsions 178

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

BUDARIN, Pavel Ivanovich, prof.; MULTYKH, Yevgeniy Vasil'yevich, zasl. vrach RSFSR; LOTYSHEV, I.P., red.

[Regimen for the patient in cardiovascular diseases] Rezhim bol'nogo pri serdechno-sosudistykh zabolevaniiakh. Krasnodar, Krasnodarskoe knizhnoe izd-vo, 1965. 19 p. (MIRA 18:7)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

L 7911-66 EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/JG

ACC NR: AP5025777 SOURCE CODE: UR/0363/65/001/009/1454/1458

AUTHOR: Mul'vidskiy, M. G.; Pelevin, O. V.

ORG: Giredmet

TITLE: Method for determining the distribution coefficients of the volatile components in growing single crystals of gallium arsenide by directed crystallization

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 9, 1965, 1454-1458

TOPIC TAGS: arsenide, gallium compound, single crystal, crystallization, selenium, tellurium, zinc

ABSTRACT: Alloying of gallium arsenide is generally done with very strongly volatile additives: selenium, tellurium, and zinc. Growing of the single crystals is done in a hermetically sealed thermostatted apparatus in the presence of a stable gas phase of arsenic and with the alloying additive over the solution. Under these conditions, the distribution of the alloying additive along the length of the ingot is determined not only by the distribution of the alloying additive between the

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crystal and the melt, but also between the melt and the gas phase. The distribution equation for this case has been given in the following form:

$$c = K \cdot c_0 \left(1 - \frac{g}{\alpha + 1}\right)^{K-1} \qquad (2)$$

where alpha = V/v.K'; here V and v are the volumes of the gas and the condensed phases, respectively; K' is the distribution coefficient of the additive between the liquid and gas phases. The article demonstrates by mathematical development that, in the growing of gallium arsenide crystals by directed crystallization, the distribution of the volatile additives along the length of the ingot depends on the magnitude of the integral distribution coefficient (K_{int}). The value of the ratio K_{int}/K depends on the effective distribution coefficient, K, the partial pressure of the additive over the melt, the volumes of the gas and condensed phases, and the mean temperature of the gas phase. The distribution coefficients between the crystal and the melt for zinc and tellurium in gallium arsenide are equal to 0.415 and 0.046, respectively. The concentration of vacancies in samples of the

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ACC NR: AP5025777

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p-type coincides with the concentration of zinc atoms, in the concentration range from $1x10^{18}$ to $1x10^{20}/cm^3$. In crystals with tellurium, at a concentration of $5x10^{18}$, there is already observed a noticeable divergence with respect to the concentration of tellurium atoms. "In conclusion, we wish to express our indebtedness to S. M. Solodovnik, V. K. Lushinov, and R. F. Makarovoy for the spectrum and chemical analysis, L. A. Kulikova for making the electrical measurements, and M. D. Shneyder for his participation in the calculations."
Orig. art. has: 6 formulas and 4 figures

SUB CODE:IC, MM/ SUBM DATE:19Mar65/ ORIG REF: 003/ OTH REF: 007

Card 3/3

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

MULYAR, A. - BOGDANCHIKOV, I. - KHALYAPIN, I.

Moving-picture Projection

Fight for reducing the wear and tear of movie films.
Kinomekhanik no. 12, 1952

9. Monthly List of Russian Accessions, Library of Congress, May 1953, Uncl.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

MULYAR, A., starshiy kinotekhnicheskiy inspektor (Kishinev).

Release only excellent-quality production. Kinomekhanik no.8:32-33 Ag '53. (MLRA 6:8)

(Moving-picture projection)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

L 3179-66 EIC(m) WW

ACCESSION NR: AP5015353 UR/0286/65/000/009/0098/0099
681.14

AUTHOR: Chekalov, D. N.; Mulyar, L. G.; Krasikov, V. I.; Miroshnichenko, A. K.; Smirnov, N. Ye.; Kheyfets, A. I.; Smirnov, K. F.; Obukhov, Yu. A.; Vorontsov, A. M.; D'yakonov, G. M.; Dubro, G. B.; Alipov, A. N.

TITLE: Electronic instrument for measuring velocity, distance traversed, and time. Class 42, No. 170776

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 9, 1965, 98-99

TOPIC TAGS: tellurometer, radio rangefinder, geodetic instrument

ABSTRACT: An Author Certificate, issued for a device which measures velocity, distance traversed, and time, combines a high-precision tellurometer, a phase recorder equipped with a unit for converting sinusoidal signals to pulsed signals, and a unit for measuring phase differences. Readings are made visually. The circuit connections of the device, consisting of a series of computer-type modules, are described in detail.

ASSOCIATION: none [SP]

Card 1/2

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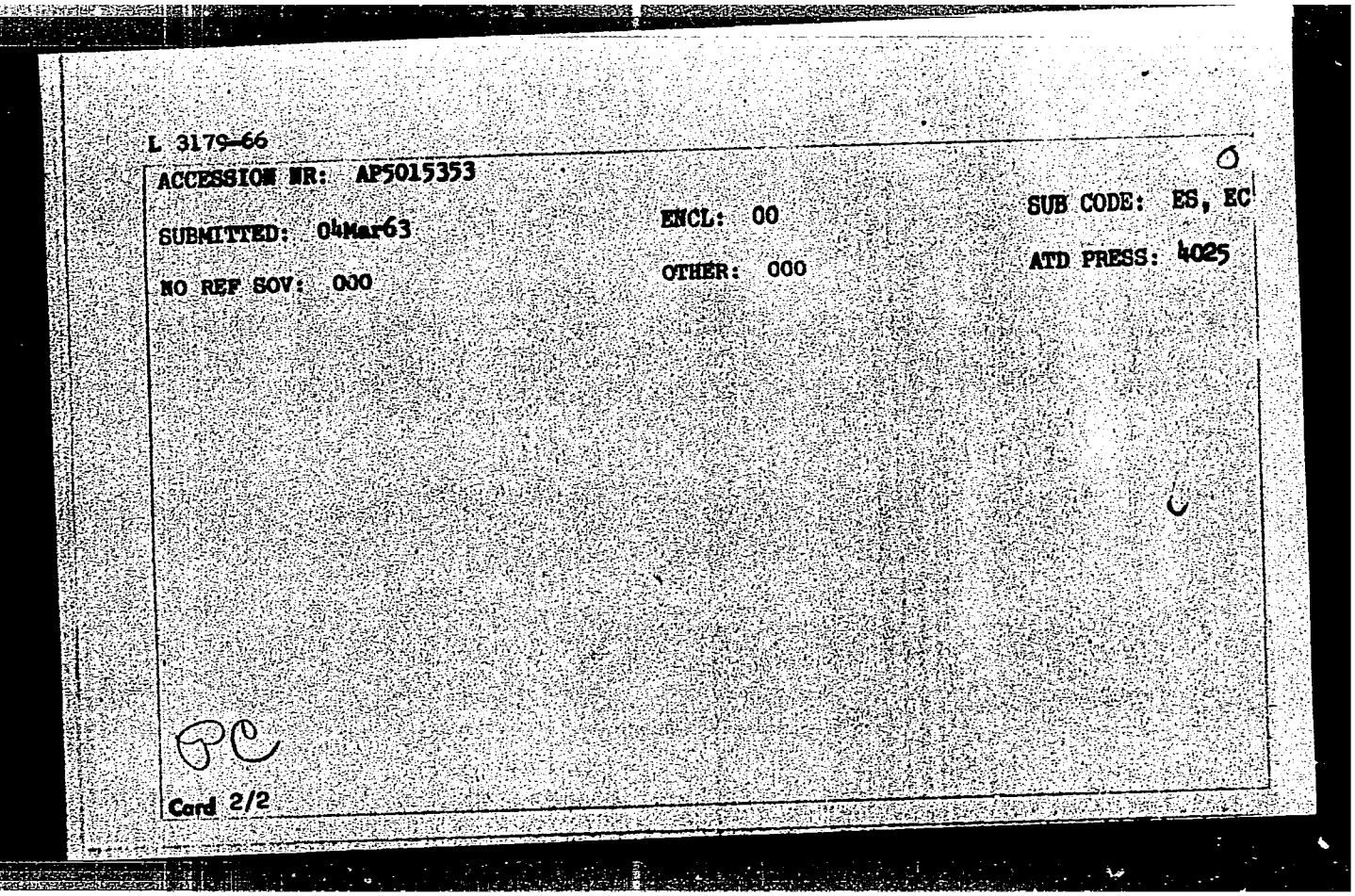

L 3179-66

ACCESSION NR: AP5015353

SUBMITTED: 04Mar63 ENCL: 00 SUB CODE: ES, EC

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4025

EC

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

MULYAR, P.

More sugar beets at reduced cost. MTO 2 no.2:10-11 F '60.
(MIRA 13:5)

1. Uchenyy sekretar' oblastnogo pravleniya Nauchno-tekhnicheskogo obshchestva sel'skogo i lesnogo khozyaystva, Kirovograd.
(Kirovograd Province--Sugar beets)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

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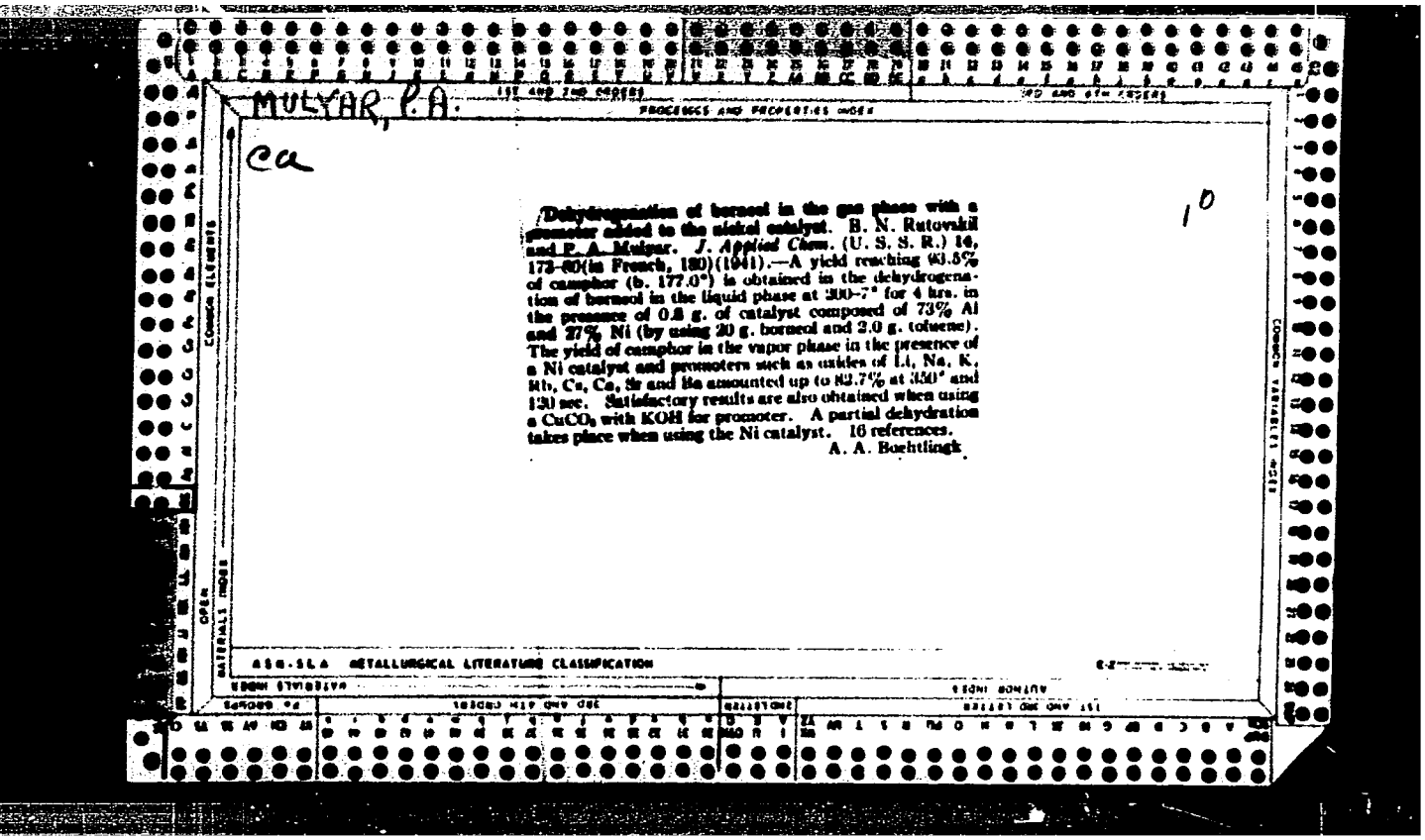

MULYAR, P. A.

Ca

10

Dehydrogenation of borneol in the gas phase with a promoter added to the nickel catalyst. B. N. Rutovskii and P. A. Mulyar. *J. Applied Chem.* (U. S. S. R.) 14, 173-80(in French, 180)(1941).—A yield reaching 93.5% of camphor (b. 177.0°) is obtained in the dehydrogenation of borneol in the liquid phase at 300-7° for 4 hrs. in the presence of 0.8 g. of catalyst composed of 73% Al and 27% Ni (by using 20 g. borneol and 2.0 g. toluene). The yield of camphor in the vapor phase in the presence of a Ni catalyst and promoters such as oxides of Li, Na, K, Rb, Cs, Ca, Sr and Ba amounted up to 82.7% at 350° and 130 sec. Satisfactory results are also obtained when using a $CuCO_3$ with KOH for promoter. A partial dehydration takes place when using the Ni catalyst. 16 references.

A. A. Boehtlingk

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

AID P - 3442

Subject : USSR/Electricity

Card 1/1 Pub. 27 - 9/32

Authors : Bogoroditskiy, N. P., Doc. of Tech. Sci., Prof. P. A. Mulyar, Kand. of Tech. Sci., Leningrad

Title : Electroceramics, glass, and organic plastic materials

Periodical : Elektrichestvo, 10, 35-39, O 1955

Abstract : The authors examine two groups of new electric insulating materials: electro- and radio-ceramics, new insulating glass, and organic plastic masses. Properties and characteristics are discussed and presented in two tables.

Institution : None

Submitted : Ap 26, 1955

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

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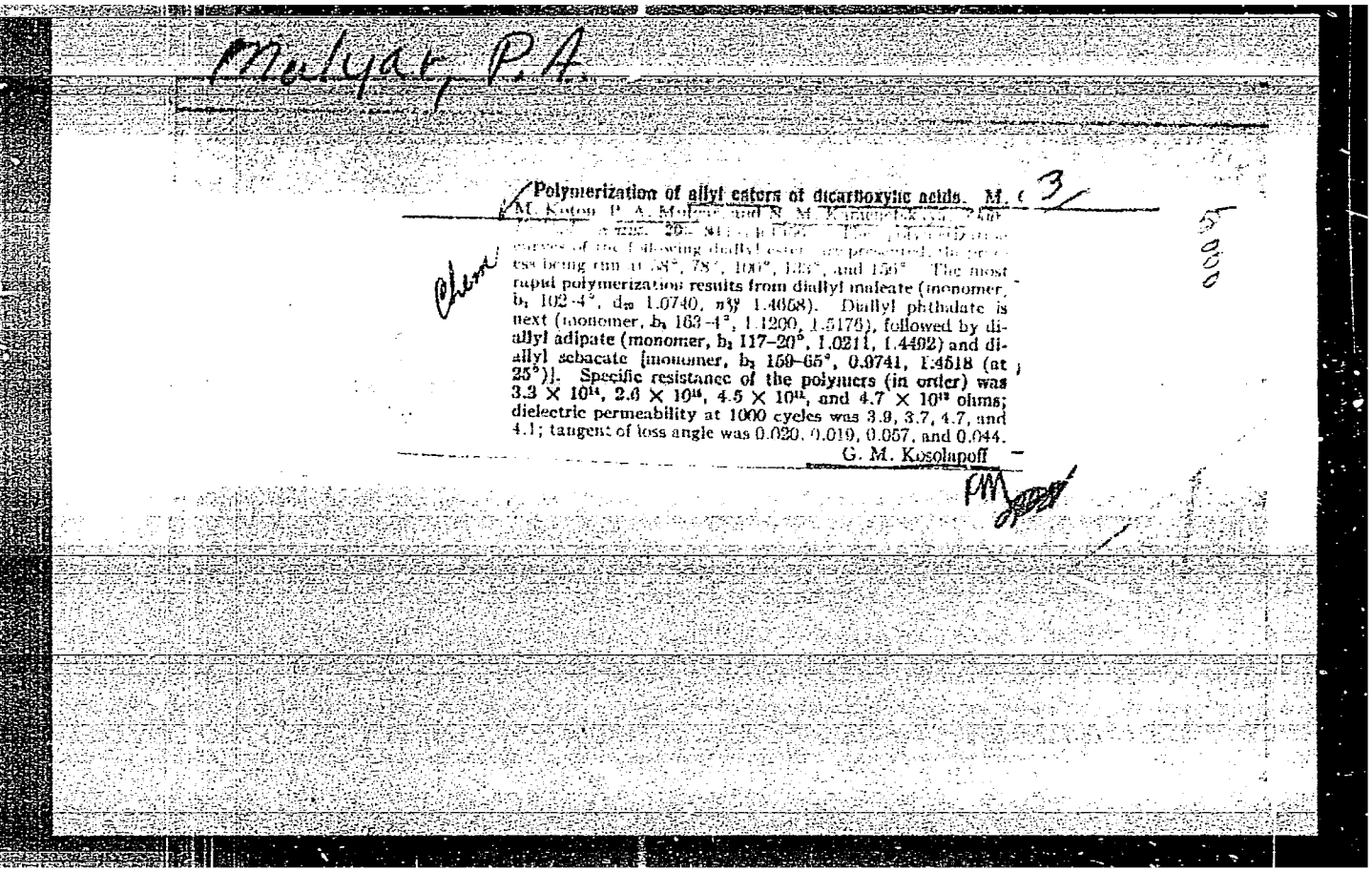

Mulyar P.A.

Polymerization of allyl esters of dicarboxylic acids. M. (

M. Kogan, P. A. Mulyar, and S. M. [illegible]

[illegible] 25° [illegible]

[illegible] curves of the following diallyl esters are presented, the process being run at 58°, 78°, 100°, 125°, and 150°. The most rapid polymerization results from diallyl maleate (monomer, b_1 102–4°, d_{20} 1.0740, n_D^{20} 1.4658). Diallyl phthalate is next (monomer, b_3 163–4°, 1.1200, 1.5176), followed by diallyl adipate (monomer, b_3 117–20°, 1.0211, 1.4492) and diallyl sebacate [monomer, b_3 159–65°, 0.9741, 1.4518 (at 25°)]. Specific resistance of the polymers (in order) was 3.3×10^{14}, 2.6×10^{14}, 4.5×10^{14}, and 4.7×10^{13} ohms; dielectric permeability at 1000 cycles was 3.9, 3.7, 4.7, and 4.1; tangent of loss angle was 0.020, 0.019, 0.057, and 0.044.

G. M. Kosolapoff

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

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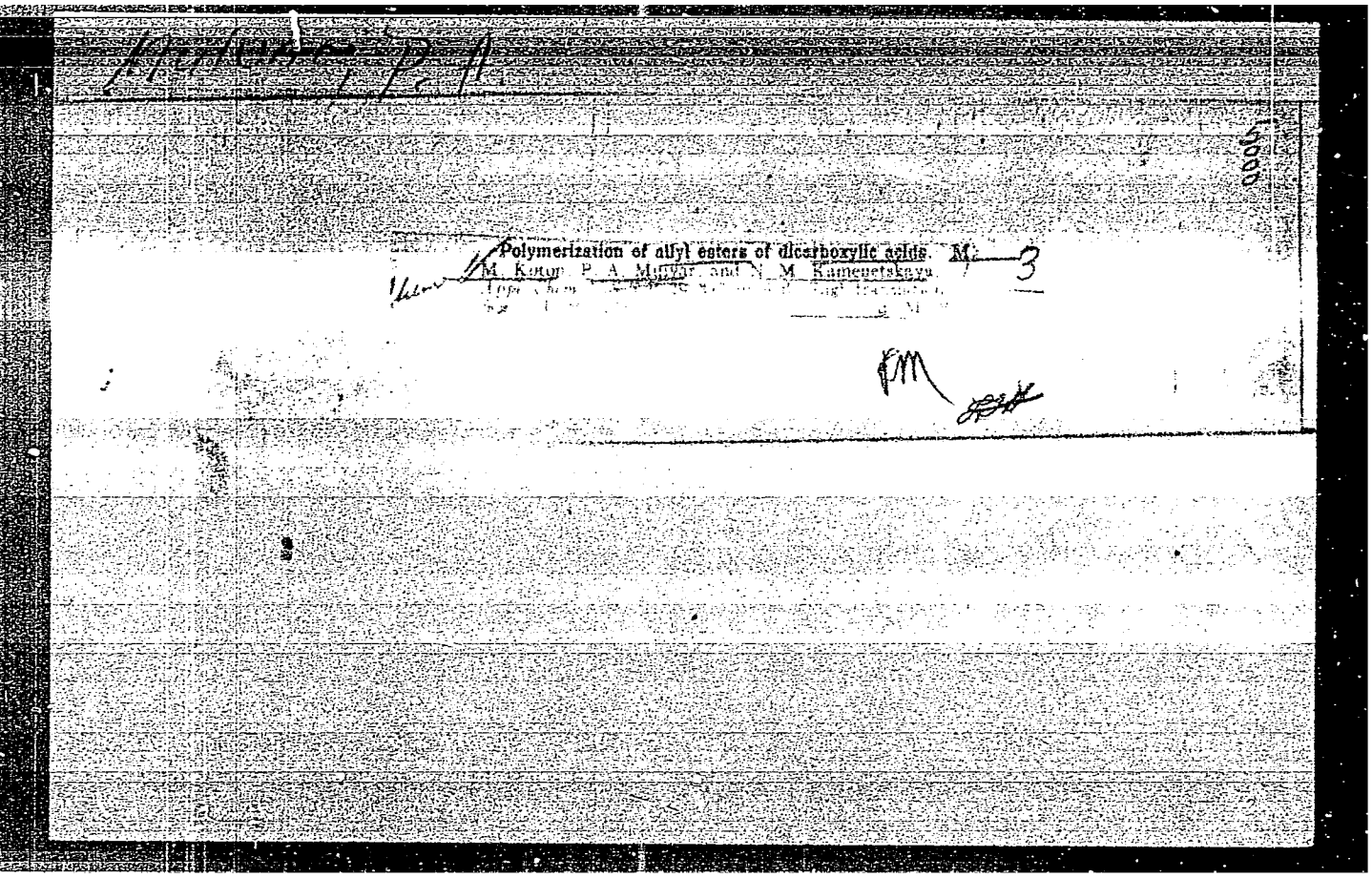

Polymerization of allyl esters of dicarboxylic acids. M.

M. Kotov, P. A. Mirtov, and N. M. Kamenetskaya.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

MULYAR, S.

Fifty centners of corn per hectare. NTO 3 no. 5:9 My '61.
(MIRA 14:5)

1. Uchenyy sekretar' Kirovogradskogo oblastnogo pravleniya nauchno-tekhnicheskogo obshchestva sel'skogo i lesnogo khozyaystva.
(Corn (Maize))

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

MULYAR, Ya.; LAKHTIONOV, V.

Machine tools designed by operator Rybolovlev. Izobr.i rats. no.10:12-13 O '59. (MIRA 13:2)

1. Sotrudniki mnogotirazhnoy gazety "Elektrodnik," g.Zaporozh'-ye.
(Zaporozh'e--Electrodes)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

ANDRONOV, I.K., professor; BEREZANSKAYA, Ye.S.; GLAGOLEV, N.S.; DEPMAN, I.Ya., professor; ZOLOTOVITSKIY, Ye.M.; IL'IN, A.Ye., dotsent; LYAPIN, S.Ye., MULYARCHIK, M.Z., uchitel'; PETRAKOV, I.S.; CHICHIGIN, V.G.

Aleksandr Nikolaevich Barsukov. Mat. v shkole no.1:72-74 Ja-F '57. (MLRA 10:2)

1. Moskovskiy oblastnoy pedagogicheskiy institut (for Andronov). 2. Zaveduyushchiy kafedroy metodiki matematiki Moskovskogo pedagogicheskogo instituta imeni V.I. Lenina (for Berezanskaya). 3. Metodist Shcherbakovskogo rayona goroda Moskvy (for Glagolev). 4. Leningradskiy pedagogicheskiy institut (for Depman). 5. Metodist Balashikhinskogo rayona Moskovskoy oblasti (for Zolotovitskiy). 6. Moskovskiy pedagogicheskiy institut imeni V.I. Lenina (for Il'in). 7. Zaveduyushchiy kafedroy metodiki matematiki Leningradskogo pedagogicheskogo instituta imeni A.I. Gertsena (for Lyapin). 8. Shkola No.29 goroda Moskvy (for Mulyarchik). 9. Zaveduyushchiy kabinetom matematiki Moskovskogooblastnogo instituta usovershenstvovaniya uchiteley (for Petrakov). 10. Zaveduyushchiy kafedroy metodiki matematiki Moskovskogo pedagogicheskogo instituta imeni V.P. Potemkina (for Chichigin).

(Barsukov, Aleksandr Nikolaevich, 1891-)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

MULYARCHIK, T.M.

Determining the polarization of the nebula of Andromeda [with summary in English]. Izv.Astrofiz.inst. AN Kazakh.SSR 5 no.7:21-24 '57. (MLRA 10:7)
(Nebulae) (Polarization (Light))

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

AUTHORS: Mulyarchuk, T. M. and Petrova, K. I.

TITLE: Increasing the sensitivity of some photographic emulsions by a preliminary short exposure. (Povysheniye chuvstvitel'nosti nekotorykh fotomaterialov putem predvaritel'noy podsvetki).

PERIODICAL: Astronomicheskii Zhurnal, 1957, Vol.34, No.1, pp.102-104 (USSR)

ABSTRACT: A preliminary short exposure to a density of 0.2 - 0.3 with an exposure time of 1/100s allows a reduction in the exposure time in the photography of weak objects. It is also useful in photographing the night sky.

Characteristic curves are given for the emulsions RF-3 and Isopan ISS.

Institute of the Physics of
the Atmosphere Ac.Sc. USSR.
State Astronomical Institute
imeni P. K. Shternberg.

Recd. Aug.25, 1956.

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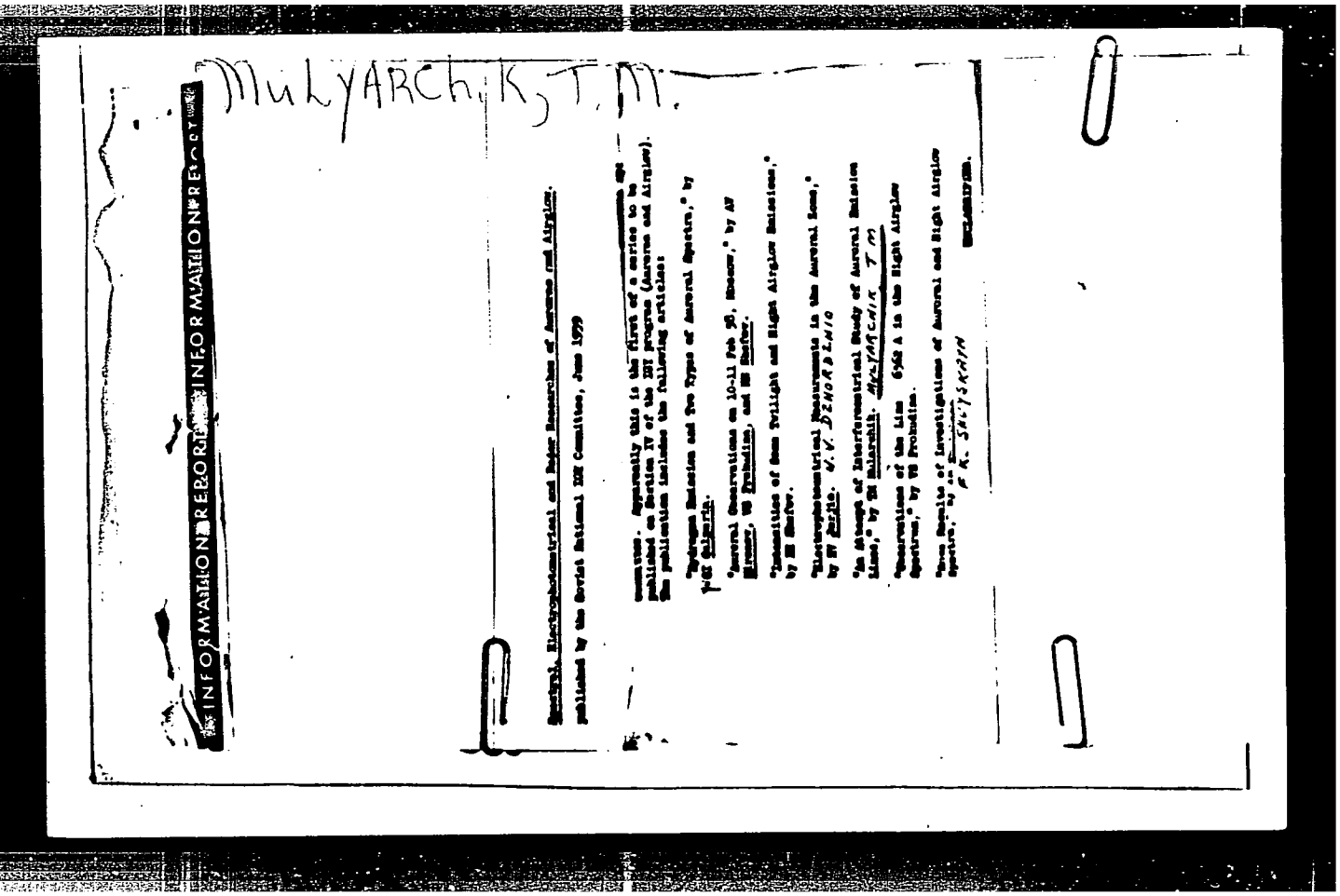

MULYARCHUK, K. T. M.

INFORMATION REPORT

Electrophotometrical and Radar Researches of Aurorae and Airglow.

published by the Soviet National IGY Committee, June 1959

summary. Apparently this is the first of a series to be published on Section IV of the IGY program (Aurorae and Airglow). The publication includes the following articles:

"Polygon Emission and Two Types of Auroral Spectra," by [illegible]

"Auroral Observations on 10-11 Feb 58, Moscow," by AF Khrgian, VE Pudovkin, and EE Shefer.

"Examination of Some Twilight and Night Airglow Emissions," by EE Shefer.

"Electrophotometrical Measurements in the Auroral Zone," by AF Kirilin. V. V. BYKOVSKIY

"An Attempt of Interferometrical Study of Auroral Emission Lines," by EE Shefer. MULYARCHUK, K. T. M.

"Observations of the Line 6568 A in the Night Airglow Spectrum," by VE Pudovkin.

"Some Results of Investigations of Auroral and Night Airglow Spectra," by [illegible]

[illegible]

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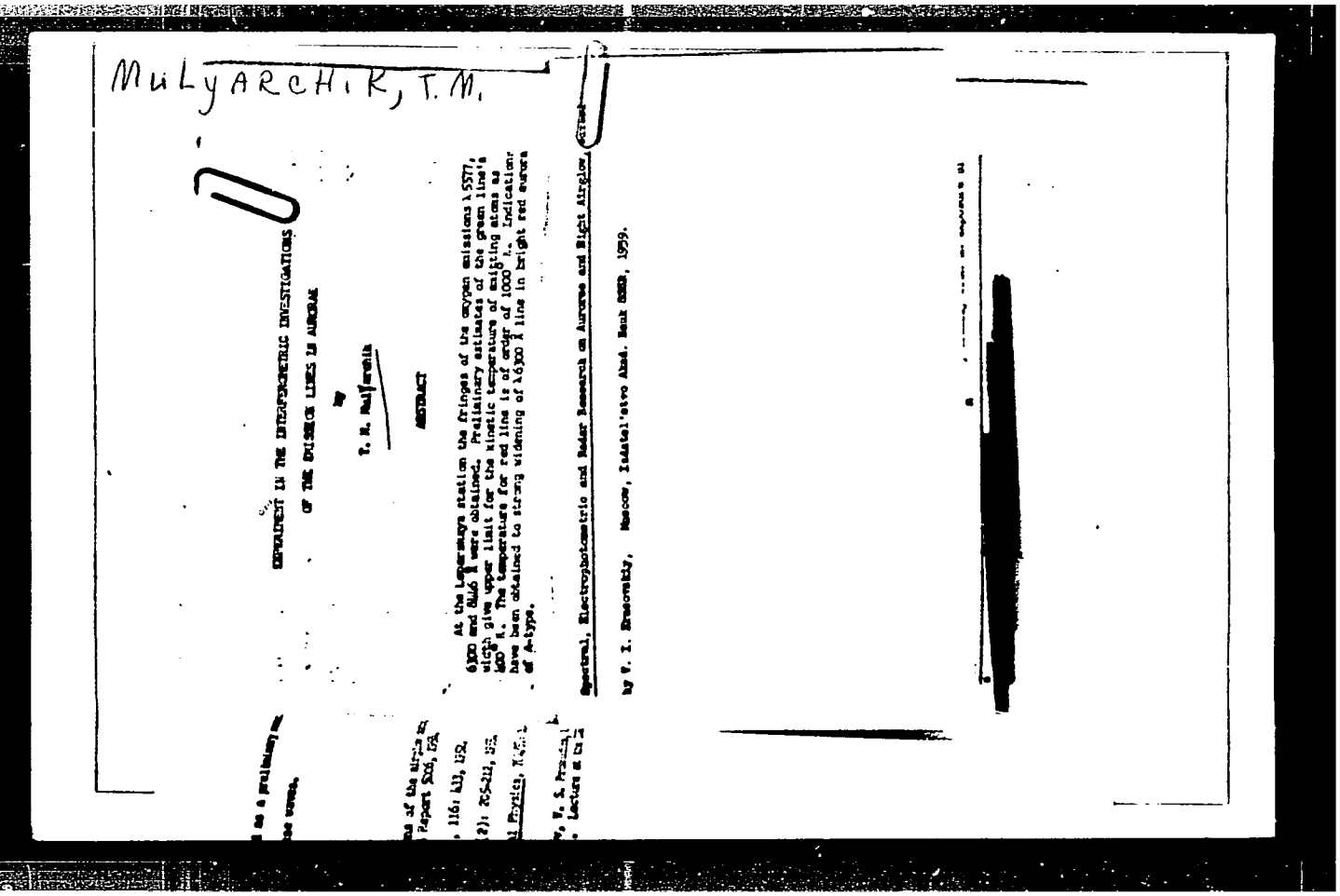

MULYARCHIK, T.M.

EXPERIMENT IN THE INTERFEROMETRIC INVESTIGATIONS OF THE DOUBLET LINES IN AURORAE

by

T. M. Mul'yarchik

ABSTRACT

At the Lapparanta station the fringes of the oxygen emissions λ5577, 6300 and 6363 Å were obtained. Preliminary estimates of the green line's width give upper limit for the kinetic temperature of emitting atoms at 400° K. The temperature for red line is of order of 1000° K. Indications have been obtained to strong widening of λ6300 Å line in bright red arcs of A-type.

Spectral, Electrophotometric and Radar Research on Aurorae and Night Airglow, (Title)

by V. I. Krasovskiy, Moscow, Izdatel'stvo Akad. Nauk SSSR, 1959.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

22392

S/035/61/000/005/027/042
A001/A101

3,1810

AUTHOR: Mulyarchik, T.M.

TITLE: An experience of interferometric studies of emission lines in auroras

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 5, 1961, 63-64, abstract 5A420 (V sb. "Spektr. elektrofotometr. i radiolokats. issled. polyarn. siyaniy i svecheniya nochn. neba. no. 1", Moscow, AN SSSR, 1959, 41 - 42, Engl. summary)

TEXT: Aurora observations were carried out at a station at Loparskaya by means of a Fabri-Pero interferometer. The interferometer dispersion region for λ 5577 amounted to 0.05 A. The relative aperture of the first device was 1 : 3. Interference rings of lines λ 5577 and λ6300 were obtained. The upper limit of kinetic temperature of oxygen atoms in the $^1S_0$ state was preliminarily estimated as 400°K from the half-width of line λ 5577. For the line [O I] λ6300 temperature is 1,000°K. A pattern was obtained which revealed extreme intensity of red forms of the A-type caused by emission λλ6300 - 6364. The interference pattern

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22392

An experience of interferometric studies ... S/035/61/000/005/027/042
A001/A101

of line λ 6300 was smeared. The second device, intended for the infrared portion of spectrum, consisted of an interferometer and an electronic-optical converter. The relative aperture of the device was 1 : 2.8. Interference rings of line .8446 divided into two components were obtained.

O. Vaysberg

[Abstracter's note: Complete translation]

Card 2/2

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

68239

S/049/59/000/12/027/027
E032/E391

3.1810

AUTHOR: Mulyarchik, T.M.

TITLE: Interferometric Measurements of the Width of the Line λ 5577 Å [OI]

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1959, Nr 12, pp 1902 - 1903 (USSR)

ABSTRACT: In the winter of 1958-1959 the northern station of the Institute of Physics of the Atmosphere of the Ac. Sc., USSR, ($\bar{\varphi} = 64^{o}$, $\Lambda = 127^{o}$) carried out interferometric measurements of the width of the forbidden line λ 5577 Å [OI] emitted by different forms of polar aurorae. This lines has a negligibly small natural width and since collision broadening can be neglected, the observed width is due entirely to the Doppler effect. Line width measurements on this line can therefore be used to estimate kinetic temperatures. The observations were carried out with the aid of a Fabry-Perrot interferometer with glass plates and multilayer dielectric coatings (reflection coefficient 94%). It was found that not all the profiles of the above line are purely Doppler profiles. The differences appear to be due to the

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68239

S/049/59/000/12/027/027

Interferometric Measurements of the Width of the Line λ 5577 Å [OI]

superposition of layers with different temperatures. In lower parts of bright ray-like forms and uniform arcs, an average temperature of 195 ± 25 °K was found, while in the diffuse filamentary forms the temperature was 250 ± 30 °K. The highest temperature (325 ± 40 °K) was obtained during intense pulsating forms (PS) against a background of reddish luminescence. Unfortunately, parallactic determinations of the altitudes of the various forms for which the interferograms were obtained were not carried out. The temperature of undisturbed night sky was found to be 260 ± 35 °K. This differs from the value obtained by Wark (Ref 4) and Armstrong (Ref 5). The difference may be due to the heating of the upper atmosphere in high geographic latitudes. Such a heating has been reported in Refs 6 and 7.
There are 1 figure and 7 references, 4 of which are English and 3 Soviet.

ASSOCIATION: Akademiya nauk SSSR Institut fiziki atomsfery (Institute of Physics of the Atmosphere, Ac.Sc. USSR)

SUBMITTED: July 21, 1959

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

MULYARCHIK, T. M., Cand Phys-Math Sci (diss) -- "Determining the termperature of the upper atmosphere from the contours of certain emission lines". Moscow, 1960. 8 pp (Acad Sci USSR, Inst of the Phys of the Atmosphere), 110 copies (KL, No 10, 1960, 125)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

69097

S/049/60/000/03/010/019
E032/E614

3.900

AUTHOR: Mulyarchik, T.M.

TITLE: Interferometric Measurements of the Temperature of the Upper Atmosphere from the Line Widths of Certain Emission Lines

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1960, Nr 3, pp 448-456 (USSR)

ABSTRACT: The Fabry-Perrot interferometer has been used to examine the profiles of certain emission lines of the upper atmosphere and the results obtained are now reported. It is assumed that collision broadening and the natural line width of the lines can be neglected in comparison with the Doppler broadening. The velocity of turbulent motion in the ionosphere apparently does not exceed 5×10^3 cm/sec (Greenhow and Neufeld, Ref 1) and thermal velocities in the upper atmosphere are of the order of 10^5 cm/sec. It may therefore be considered that the broadening of the lines is due to the thermal motion of atoms only. If this is so, then the temperature of the emitting atoms T depends on the half-width according to the relation

$$\delta\lambda = 7.16 \times 10^{-7} \lambda \sqrt{T/m},$$

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

Interferometric Measurements of the Temperature of the Upper Atmosphere from the Line Widths of Certain Emission Lines

where m is the atomic weight and λ is the wavelength. The temperature determined this way will coincide with the kinetic temperature of the upper atmosphere at the altitude at which the emission takes place, only if the Maxwellian distribution is preserved. It is argued that temperature measurement using the width of the line λ 5577 Å [OI] ($\tau \approx 1$ sec) yields significant results at least up to 150 km. The corresponding altitudes for the lines λ 6300 Å [OI] ($\tau \approx 100$ sec) and λ 5198-5200 Å [NI] ($\tau \approx 10^5$ sec) are 300 km and 600 km respectively. τ is the time necessary for the distribution to reach the Maxwellian form. Since it appears that the most probable mechanism of excitation of the lines λ 6300 Å [OI] and λ 5198-5200 Å [NI] in aurorae is excitation by electrons with energies of about 10 eV, it follows that the temperatures measured from the line-widths of these lines coincide with the kinetic temperatures at all altitudes which are of interest in the present work. During the winter of 1958/9 observations were carried out at the Northern Station of the Institute of Physics of the Atmosphere ($\varphi = 69^\circ$, $\lambda = 33^\circ$, $\Phi = 65^\circ$) of certain forbidden emission lines at night and during twilight. Records were

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Interferometric Measurements of the Temperature of the Upper Atmosphere from the Line Widths of Certain Emission Lines

made of the following lines: λ 5577 Å [OI], λ 6300 Å [OI], λ 5198-5200 Å [NI]. The apparatus employed is shown diagrammatically in Fig 2. The Fabry-Perrot interferometer 1 consisted of two glass plates with a working diameter of 5 cm. The plates were worked to an accuracy of λ/75. The separate emission lines were defined by the interference filters 2 having a half-width of 80 to 100 Å and a maximum transmission of 30 to 40%. The reflectivity of the multilayer dielectric coatings on the Fabry-Perrot plates is shown in Fig 1. The radiation was directed onto the interferometer by means of the plane mirror 6 and/or by the rotation of the housing in which the interferometer was placed. The interference pattern was focused on the photographic plate 4 by means of the lens 3. In the case of λ 5577 and λ 6300 Å, fused quartz rings 6, 8 and 10 mm thick were used as spacers, while in the case of λ 5198-5200 Å an invar spacer 3 mm thick was employed. The interferometer was placed in a hermetically sealed housing 5 which was carefully thermostated (± 0.05°). The interferometer was adjusted with the aid of equal inclination fringes to an accuracy of about λ/40. The instrumental profile was determined

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S/049/60/000/03/010/019
E032/E614

Interferometric Measurements of the Temperature of the Upper Atmosphere from the Line Widths of Certain Emission Lines

from the known line profiles of the krypton yellow and green lines, and the two profiles of the lines under investigation were determined by subtraction. It was found that the Voigt half-widths for the yellow and green krypton lines were 0.0083 ± 0.002 Å and 0.0094 ± 0.0002 Å respectively. The results obtained are as follows:
1. λ 5577 Å [OI]. About 40 interference patterns were obtained for various forms of aurorae. About one-half of these have now been examined. The temperatures obtained are 195 ± 30°K (lower parts of bright rays RA), 250 ± 30°K (diffuse filamentary forms, diffuse luminescence). The highest temperature recorded (325 ± 25°K) was obtained during intense pulsating forms. The temperature measured from the nightglow (λ 5577 Å) was found to be 260 and 250°K (two photographs).
2. λ 6300 Å [OI]. Three photographs of the nightglow gave the following values of the temperature 1230 ± 150°K, 1120 ± 150°K, 1280 ± 150°K. A photograph of a twilight flare in the line λ 6300 Å (Sun at 6 to 10° below horizon) gave a value of 910 ± 200°K.

Card 4/5

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

69097

S/049/60/000/03/010/019
E032/E614

Interferometric Measurements of the Temperature of the Upper Atmosphere from the Line Widths of Certain Emission Lines

3. λ 5200 Å [NI]. The temperatures obtained from the width of this line were found to be 1850 ± 250°K and 2000 ± 300°K.

A comparison of the temperatures determined from the lines λ 5577 Å and λ 6300 Å obtained for various latitudes shows that the temperature of the upper atmosphere appears to be higher at higher latitudes.

Acknowledgment is made to V.I. Krasovskiy who directed this work and to the workers of the Northern Scientific Station of IFA AS USSR Yu. I. Gal'perin, V.G. Trunov and S.S. Ushakova for their assistance.

There are 5 figures and 25 references, 5 of which are Soviet, 17 English and 3 French.

ASSOCIATION: Akademiya nauk SSSR, institut fiziki atmosfery (Academy of Sciences USSR, Institute of Physics of the Atmosphere)

SUBMITTED: August 20, 1959

Card 5/5

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

67562

3.9000
~~3 (7), 24 (7)~~

AUTHOR: Mulyarchik, T. M.

SOV/20-130-2-16/69

TITLE: Interferometric Measurement of the Widths of the Emissions λ 6300 Å [O I] and λ 5198 - 5200 Å [N I] in Aurorae Boreales

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 2, pp 303 - 306 (USSR)

ABSTRACT: The afore-mentioned measurements were made in the winter of 1958-1959 at the Loparskaya Station of the Institut fiziki atmosfery AN SSSR (Institute of Physics of the Atmosphere of the AS USSR). An apparatus with a Fabri-Perot interferometer was used. The interferometer was placed in a hermetically sealed chamber. Figures 1 and 2 illustrate photographs of interference rings of the line λ 6300 Å [O I] and the yellow line of krypton. Figure 3 depicts a photometric section through the inner ring for 6300 Å. The width of the lines under consideration is fully determined by the Doppler effect. Measurement of the spectral line widths thus allows to determine the temperature within the region of luminosity. The kinetic temperature can be determined from the spectral line widths only if the radiant atoms retain the Maxwellian velocity distribution. In

Card 1/3

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R001135610004-0

Interferometric Measurement of the Widths of the Emissions SOV/20-130-2-16/69
λ6300 Å [O I] and λ5198 - 5200 Å [N I] in Aurorae Borealis

the case of fluorescence and electron impact, the temperature within the region of luminosity determined from the spectral line widths is in agreement with the kinetic temperature. In the case of dissociation, dissociative recombination, charge exchange, etc it may greatly differ from the kinetic temperature of the medium. If, however, the excited atom undergoes several collisions, a Maxwellian velocity distribution is obtained, and the reliability of temperature measurement is independent of the excitation mechanism. For this reason, the temperature of the upper atmosphere is most conveniently determined from the forbidden emission. From the lines λ 5577 Å [O I], λ 6300 [O I] and/or λ 5200 Å [N I] temperatures can be determined at least up to 150 km, 300 and/or 600 km. For all altitudes under consideration, the temperatures determined from the emission line widths obviously agree with the kinetic temperature. The principal error of this interferometric method for temperature measurement of the upper atmosphere is the unknown altitude of the radiant layer. At present, the altitude can only be estimated, and the aurora borealis at λ 6300 Å at night is probably 250 to 300 km high. The luminosity with λ 5200 Å is probably no

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